

Heat Exchangers

Inter Cooler / After Cooler



Purpose of Inter-cooler and after cooler Heat exchangers

Target equipment Inter-cooler and after cooler Heat exchangers are utilized in several industries, especially in chemical plants and oil refineries, textile industries. The purpose of these heat exchangers is to transfer heat from machinery to the other, most often from a liquid to the other. The constant efficiency of the heat exchanger demands for regular inspection to assess the equipment integrity An inter cooler, also known as the charge air cooler is heat exchange device of the air to air or air to liquid kind that is used on supercharged and turbocharged internal combustion engines in order to maximize its volumetric efficiency by raising the charge density of intake air via almost isobaric.

Types of inter cooler/ after cooler

The inter-coolers, sometimes called as the after coolers, come in varied shape, design and size based on the special requirements and performance of the supercharger system . Some of the usual spatial designs are

TMIC (Top Mounted Inter Coolers)

HMIC (Hybrid Mounted Inter-coolers)

FMIC(Front Mounted Inter coolers).

Each of these kinds could be cooled with an air to liquid system, air to air system , or its combination.

Function of inter cooler/ after cooler

Our inter-cooler heat exchanger to successfully cool the air passing through the device, The inter-cooler needs to be cooled with the aid of some outside means.

Many of the inter-coolers undergo cooling like an engine radiator where the air flows above the inter-cooler fins outside, that in return cools the air present inside the inter-cooler. Thus it is known as **air to air inter-coolers**. Some of the inter-coolers that are water cooled rather than by air are known as **air to water inter-coolers or after coolers**.

Advantages of inter cooler/ after cooler

The advantage that target equipment's after cooler heat exchanger is that the air passing through the device can be cooled better when compared to a traditional inter-cooler where ice and excessively cold water is utilized to cool the device.

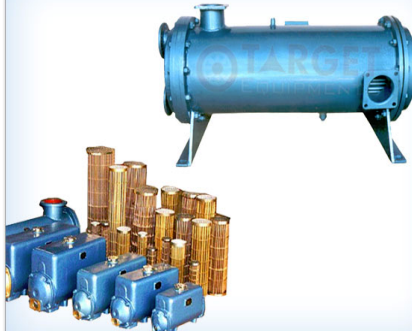
Water is a good conductor of heat rather than air; with the capacity to conduct four times its heat. It is for this reason that the after coolers are comparatively more effective. The downside is that as time goes, the water gets heated to the air temperature passing through the device and so loses its capacity to cool the incoming air.

Some of the after coolers utilize a small radiator in order to cool the water running through the system, thus making the heat exchangers ideal for racing as well as street use.

After cooler heat exchangers that are ice packed work well for applications of drag racing as only around ten seconds of functioning is required before one shuts down and goes to the victory dais.

For street applications and mild racing, after coolers or air to air inter-coolers with radiators are feasible since the ability to cool the incoming air does not minimize with time.

Shell and Tube



Target Equipments design of the shell and tube heat exchanger is quite complex. The tubes used internally are deliberately of various shapes and design to obtain different outcomes. While a few of the tubes may be plain, others may come finned longitudinally or horizontally. Additionally, the tubes can also be of various materials and thermal conductivity. For instance, Target equipments can be designed from carbon steel, stainless steel, cupronickel, copper or brass.

Testing Of Heat Exchanger

Owing to the complex nature of the shell and tube heat exchangers, regular inspection of the equipment is necessary. This can help to assess the thickness of the tube walls that are prone to pitting, erosion and corrosion over time. The status of the whole bundle of tubes may be charted and assessed through a thorough inspection with the help of a device known as Internal Rotary Inspection System that functions via ultrasonic testing and also has a non-destructive nature

Specification

| Design | Shell |
|-------------|-----------------------------|
| Length | upto 20,000 mm |
| Weight | upto 20 M.T |
| Pressure | upto 300 Kg/cm ³ |
| Temperature | upto 1000°C |

Tube Plate

Dia upto
Thickness upto 100 mm.

4000

mm

Features

Materials we used for Shell :, Copper, Carbon steel, stainless Steel sizes up to 20000 mm,

Tubes Copper, Brass, Cupro-nickel , Carbon Steels in sizes from 6 mm to 50 mm OD, Stainless Steels,

Tube Sheets: Carbon Steel, Stainless Steel, Brass etc.

Channels and Cover : Carbon Steel, Stainless Steel, Case Iron, Brass etc.

Gaskets : Rubber, Compressed

Application

Chemical, Petrochemical,

Fertiliser. Thermal Power plants,

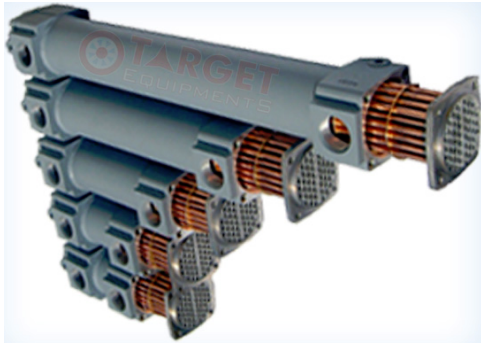
Refrigeration Plants,

marine Engines,

Turbines, Hydraulic Systems,

Sugar Machinery .

Oil Coolers Heat Exchangers



Oil coolers are classified into two. One is **air cooled - oil cooler** then **water -cooled oil cooler**. Air cooled oil coolers are mostly used where water availability is scarce and expensive. Water-cooled oil coolers, maintenance and operating cost are usually low. The cooled water manifolds, charges oil and air coolers for usage on marine engines. These heat exchangers are suitable for power steering, bow thrusters, deck machinery etc.

Application

Oil Coolers are used for various applications involving cooling of Oils,
Industrial Oil Coolers heat exchangers are widely used in refrigeration,
power plants,
air conditioning,
processing of natural gas,
chemical plants,
petroleum refineries and petrochemical plants.

Plastic Machinery

Hydraulic Power Packs

Marine oil cooler

Tube Bundle



Target Equipment design of the tube heat exchanger is quite complex. The tubes used internally are deliberately of various shapes and design to obtain different outcomes. While a few of the tubes may be plain, others may come finned longitudinally or horizontally. Additionally, the tubes can also be of various materials and thermal conductivity. For instance, Target equipment can be designed from carbon steel, stainless steel, cupronickel, copper or brass.

Specification and servicing.

We can manufacture a complete unit, replacement tube bundles (elements) or even a "parts kit" We replace existing tube bundle as per customer request we do size like Length upto 20,000 mm, Weight up to 20 M.T , Pressure up to 300 Kg/cm³ Temperature up to 1000°C, Tube Plate Dia upto 4000 mm, Thickness up to 100 mm.

Features

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Tube Sheets: Carbon Steel, Stainless Steel, Brass etc.

Channels and Cover : Carbon Steel, Stainless Steel, Case Iron, Brass etc.

Gaskets : Rubber, Compressed

Application

Chemical, Petrochemical, marine Engines,

Sugar Machinery Turbines, Hydraulic Systems,

Fertiliser Refrigeration Plants, Thermal Power plant

Evaporator Coil Cooler



Fin Type Cooler are produced in forced draught and induced draught designs, and in single and multi-fan arrangements, depending customer specifications and requirements, We are the professional Fin Type Cooler and air cooled condenser manufacturers, tubes in copper and fins are aluminium MOC we use 5/8' or 3/8' and 1/2' OD copper tubes as per customer specification, all tubes are well expanded tested for pressure and leak.

Advantages of Fin Type Cooler

A great deal of water gets preserved on using Fin Type Cooler.

Less or no preparation needed as atmospheric air is in abundance

No formation of scale or heat exchanger cleaning is required

There are no mobile parts except for the fan and the motors. Hence the cooling tower maintenance is negligible

Dust, fly ash, living organisms or dirt do not get mixed up with process water

There are no constraints placed on the location of plant

No corrossions caused by air

This cooling tower performance ensures minimal environmental impact

Reduced annual operating expenses

Applications

Petroleum plant,

power utility,

cement,

refrigeration system

sugar factories,

Chillier machines,

steel manufacturing industry,

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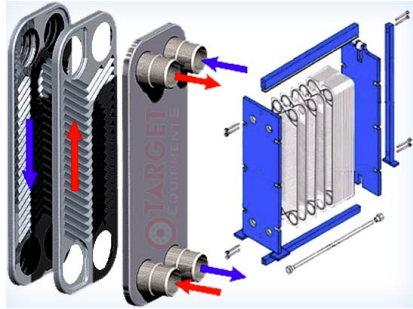
Predominantly used for air compressor and power generating units for applications of engine water cooling.

Petroleum plant, power utility, steel manufacturing industry, cement,

sugar factories, Chillier machines, refrigeration system

Chemical and gas-processing industrials.

Plate Heat Exchanger



The plate heat exchanger consists of a pack of corrugated metal plates with portholes for the passage of the two fluids between which heat transfer will take place. The plate pack is assembled between a frame plate and a pressure plate and compressed by tightening bolts.

Function of Plate Heat Exchangers

The plates are fitted with a gasket which seals the channel and directs the fluids into alternate channels. The number and size of the plates are determined by the flow rate, physical properties of the fluids, pressure drop and temperature program. The plates and the pressure plate are suspended from an upper carrying bar and located by a lower guiding bar both of which are fixed to the support columns. Connections are located in the frame cover, or if either or both fluids make more than a single pass within the unit, the frame and pressure plates. We are in the process of developing the Plate Heat Exchanger and would take up the manufacturing in the near future.

Applications

Lube Oil Coolers

Steam Heaters

Jacket Water Coolers

Water Heaters (non-electrical)

Fuel Oil Heaters

Gearbox Oil coolers

Equivalent to other Heat Exchangers

If you are unhappy with the original design of plate heat exchangers, send us the operating specifications and improvements required and we will offer a suitable replacement heatexchangers. We can also provide a shell and tube equivalent, if you would prefer to have a unit that is more easily repaired on our factory .

Marine Heat Exchanger



Marine heat exchangers are the most common way to cool a boat's engine, using the lake, river or ocean water in which the boat floats. Since this water may be corrosive, the engine may be cooled by a sealed mixture of [distilled water](#) and [antifreeze](#). This anode must be periodically replaced as part of regular maintenance.

Because the water the boat floats in may be contaminated with floating particles such as wood or other detritus most boats will have a filter (often stainless steel mesh) to remove these particles before they flow through the heat exchanger. This filter must be periodically cleaned or else the flow of water to the heat exchanger will become obstructed and the engine will overheat.

There are three methods employed for water-cooled marine petrol and diesel engines they are

Heat Exchanger Cooling: Heat exchanger cooling is the most common method, the seawater being isolated in components which can be designed to withstand its corrosive effect. The closed fresh-water circuit can be thermostatically controlled so that the engine operates at its design temperature.

Keel Cooling : Keel cooling is suitable for small boats operating in shallow weedy water, but the need for pipe work external to the hull is a severe limitation.

Advantages Of Marine Heat Exchangers

Header tank heat exchangers prevent aeration of the engine water circuit.

Gearbox oil and engine oil coolers are used on the suction side of the sea water pump.

Heat exchangers and exhaust manifolds are used on the discharge side of the engine.

Heat Exchangers use high-quality products incorporating both the best materials and the latest technical features that have become world known for building a Quality & reliable product.

Find your engine and check out applicable Bowman fitted parts